Volume V Number I

NORTH AND SOUTH DAKOTA HORTICULTURE

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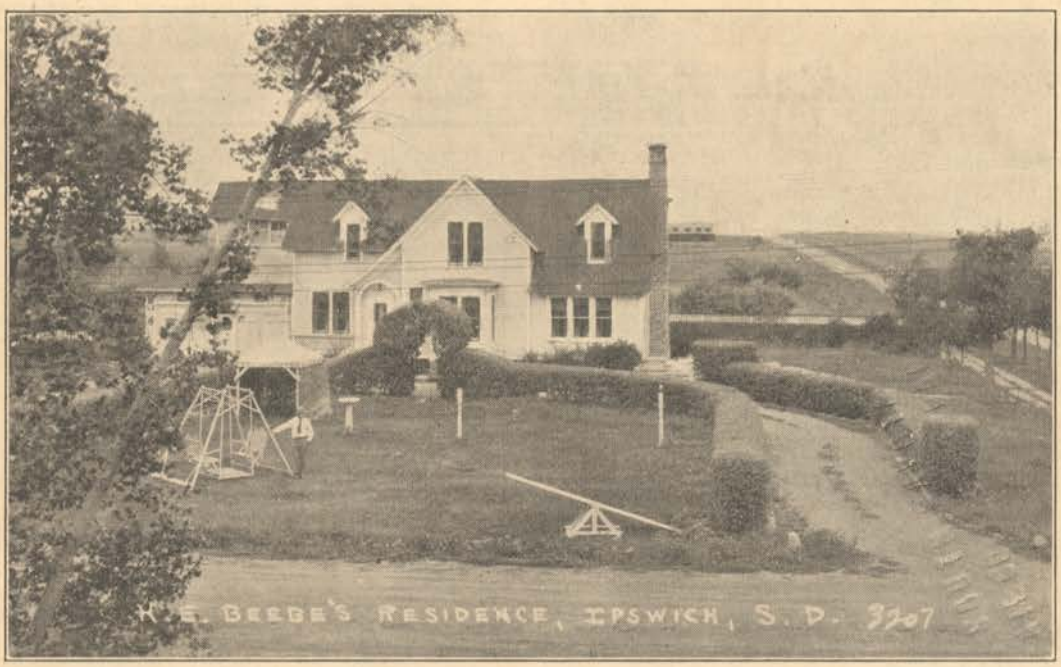

MR. H. E. BEEBE'S CALIFORNIA HOME IN IPSWICH

NORTH DAKOTA HORTICULTURE SOUTH DAKOTA

MEETING OF THE SOUTH DAKOTA HORTICULTURAL SOCIETY

The meeting will be held in the City Library at Ipswich, January 25th and 26th. We are fortunate that the meeting is to be held in a place where we have so many public spirited citizens. They do not only dream of the wonderful things that could be done to improve their community but they do them and experience the pleasure of the realities.

The Library where the meeting will be held is built of native stone and you cannot but admire it. You often hear many comments on the beautiful marbles, etc., shipped in from foreign countries, but when you really study your own material you will find that we not only have more beautiful but the variety is not surpassed anywhere in the world.

The great arch over the highway at the north edge of town is another completed idea. It shows the thought which they give to their community and the loyalty which they proudly hold out for everyone to admire. During the summer the vacant lots which would probably otherwise be eye sores are planted to Zinnias by the Garden Club. The array of color from these gigantic beds of flowers attracts the attention of the most unappreciative person who passes down the street. Mr. Beebe's talk will be well worth careful attention and study.

The front cover is a picture of Mr. Beebe's California home as he calls it. He evidently did not build it in California because he found a more suitable place for it.

You will have many profitable and pleasant thoughts to take home with you when you leave the meeting.

PROGRAM OF MEETING

Wednesday Morning

10:00—Address of Welcome, Hon. Franck Witz, Mayor of Ipswich.
10:20—President's Address, John S. Robertson.
10:40—Replanting the Capitol Grounds, Charles McCaffree.
11:00—Nominating of Officers; Appointing of Committees.
11:30—Reclaiming Waste Places, J. W. Parmley.

Wednesday Afternoon

1:30—Nursery Grown Stock Compared wth Collected Stock, L. D. Martelle.
1:50—Difficulties with Plant Breeding Plots, W. B. Wood.
2:20—Our 1932 Results with Small Fruits, E. A. Gates.
2:50—The Value of Hardiness and Hybrid Vigor in Plants, Carl A. Hansen.
3:20—Roses, W. A. Simmons.
3:40—Making South Dakota Beautiful, H. E. Beebe.

Followed by a Round-Table Discussion, with Mr. Beebe as discussion leader.

Wednesday Evening

6:30—Annual Banquet (Toastmaster to be announced later).

Thursday Morning

9:00—First Impression of a Prairie Town, H. J. Berbermeyer.
9:20—Rebuilding Our Orchards and Windbreaks, John Peter DePagter.
9:50—The Home Garden, F. X. Wallner.
10:15—Ipswich, the Zinnia City, Mrs. Bertha Bartholomew.
10:40—Horticultural Ramblings, Max Pfaender.
11:10—Backyard Planting, George W. Gurney.

Thursday Afternoon

1:30—Perennials for the Home, A. N. Shafer.
1:50—Winter Protection, Prof. Purley L. Keene.
2:20—Seed, J. B. Taylor.
2:50—Honey Production, A. G. Pastian.
3:10—Committee Reports.
3:30—Care of Plantings the First Season, H. N. Dybvig.
3:50—Conservation, R. W. Vance.
4:10—New Varieties of Fruit, John Robertson.

NORTH AND SOUTH DAKOTA
HORTICULTURE

Volume V | January, 1933 | Number 1

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Membership in the South Dakota Horticultural Society is one dollar, fifty cents of this amount is for the subscription to "North and South Dakota Horticulture." The subscription rate for affiliated organizations is twenty-five cents.

Published monthly at State Publishing Co., Pierre, S. D., by the North and South Dakota State Horticultural Societies.

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GARDEN CLUBS MAY AFFILIATE WITH THE SOUTH DAKOTA HORTICULTURAL SOCIETY

Purley L. Keene

The South Dakota Horticultural Society provides for this affiliation at an expense of 25 cents per member. You will receive a copy of the monthly issue of the South and North Dakota Horticultural magazine, which contains many articles of value. The individual membership to the South Dakota Horticultural Society is $1.00 a year. The executive board, in providing for the affiliation of local organizations, has made it possible for individual members of these organizations to secure the magazine at a very nominal cost—25 cents a year. I am sure that any of you who have read the magazine will agree with me in that it is well worth this—and more—to anyone who is at all interested in horticulture. The magazine not only contains items of interest from a horticultural standpoint, but items of general interest, such as the articles on shelter belts, on the numerous kinds of birds which inhabit our state; articles on conservation and wild life.

Most of the states to our east have a state federation of local garden clubs. The number of garden clubs at the present time in our state probably would make it inadvisable to attempt such an organization. However, the same things may be accomplished through our State Horticultural Society as is accomplished by our neighboring states through their state federations of garden clubs. The greatest value of a garden club to a local community is its influence in creating lovely gardens, in beautifying home grounds, in improving town, boulevard and park conditions, and, in recent years, the beautification of highways and roadsides. All of these are being given consideration and emphasis by our own State Horticultural Society. Local garden clubs could aid in this work by cooperating with the state society.

The South Dakota Horticultural Society receives some aid from our legislature but this is not adequate to support the organization, and in order to make it possible to publish the magazine several of our nurserymen have underwritten its publication and made it possible. They are far-sighted enough to see that as time goes on even greater interest will be shown in the various fields of horticulture, which includes our garden club work. The work of our garden clubs need not be limited to the beautifying of the landscape about our homes, schools, churches, and in our parks, but may be broadened to include the vegetable and fruit garden, municipal clean-up campaigns, and conservation work. The state society and its promoters are entitled to greater support from the people of the state and to closer cooperation from local organizations. The society has opened the door and invited you to join with them in their endeavors. They, in return, are ready to meet you more than half way and will help you solve your problems, organize your programs, aid you in securing program speakers, help you with your garden contests and your flower shows, and in many other ways.

We read in newspaper editorials, magazine articles and farm journals—everywhere—the fact that the depression has caused us to stop along life's road and give greater consideration to the beautiful things of life, which include the landscape and our gardens. They comment on the fact that we have more time to get acquainted with our neighbors, to learn that they are fellow beings just like ourselves with their problems and interests. We learn from these articles that we have more time to read and to broaden our experiences and education. In many cases this is going to reflect in the appearance of our home grounds and our gardens—flower, fruit and vegetable.

Mrs. Fisher, in her Garden Club Manual, says, "Home is the one spot dearest to us all. Large or small, it is the one place where we may express our own individuality in terms of beauty." We create what we are prone today to call the "outdoor living room," a place secluded from the public view, individual in its characteristics where we may work and play unobserved by the outside world, and incidentally learn more of the moods of nature. The interest which is being shown in outdoor things is growing rapidly. People are getting away from the mechanical side of life and thinking more and more of nature. Out of this has grown our garden club movement, with a keener enjoyment and appreciation of plant names, new varieties and kinds, color combinations and the history of individual plants, membership in local garden clubs which, in turn, are affiliated with a state organization. Through these memberships and affiliations the individual members are able to gather more concrete and valuable information by associations with other individuals than they could in most cases secure individually by reading books and magazines. Personal contact with other individuals, exchanging experiences and ideas, is our best teacher.

(Continued on page 5)

NORTH DAKOTA HORTICULTURAL SOCIETY NEWS LETTER

A. F. Yeager
Secretary

Your secretary had the pleasure of attending the Minnesota Horticultural Society meetings the last three days of November at Minneapolis. It is surprising what strides Minnesota has made in horticulture, particularly apple growing, in the last few years. This is doubtless due largely to the Minnesota Fruit Breeding Farm. The display of apples from the Fruit Breeding Farm and from the private growers in Minnesota would have done credit to any state in the Union. For that matter, Minnesota exhibits at the Mid-West Horticultural Exposition, which is open to entries from all states, took a large percentage of the top prizes.

One of the most interesting talks I heard was given on electric hotbeds. Experiments at Minnesota University indicate that except for germination of the seed, heating the electric hotbed may well be done with ordinary light bulbs. The recommendation is to use three fifty-watt bulbs for a 3x6 foot sash. The cost of heating a hotbed with electricity at 3c per kilowatt for the season was found to be about $1.00 per sash.

Seeing this interested group of persons together at this time of the year makes me wonder whether a meeting of our Society during the winter might not be practical. I would appreciate an expression from our members. How many would plan to attend such a meeting, which, I imagine, ought to be held at one of our larger cities.

The editor of one of our papers has asked what the largest potato ever grown in North Dakota weighed. I have nothing to give him. If any of you have any information, will you please send it in?

T. H. Hopper, agricultural chemist at the North Dakota Agricultural College, says that persons who want water analyzed to find out whether it is safe for irrigation, should send in about a gallon of water in a glass jug which has been thoroughly cleaned and rinsed several times with the water to be analyzed, before the final filling.

Speed Tomato, originated in Montana, seems to be making a good record many places as an extra-early of the long vine type.

Any trees which may have been broken by the sleet storms this fall should be cut back to make good clean stubs before growth starts in the spring. If the wounds left are more than one inch in diameter it would be well to paint the cuts with good white lead paint.

Good native plants for a naturalized thicket should include chokecherry, wild plum, buffalo berry, sandcherry, wild gooseberry, wild currant, Juneberry, and perhaps highbush cranberry.

A new gooseberry being offered by a Minnesota nursery is known as either Jumbo or Pepin. This is the largest gooseberry, so far as fruit size is concerned, we have ever grown, but it is quite tender and not enough of a producer to be worth while as indicated by trials here at the college.

In renewing an old hedge, such as buckthorn or honeysuckle, which has grown too high, one should cut it off, leaving stubs one foot or less in length above the ground. This should be done in early spring and when the new growth gets long enough the hedge should be trimmed into shape the first summer.

Persons who have grown Black Beauty Popcorn for home use usually continue to grow it. It is one of our early varieties and at the same time has excellent popping qualities.

People who force bulb plants such as Narcissus and Hyacinth inside often wonder what to do with the plants after blooming. There is only a choice between two things, we think: Either throw the bulbs out and forget about them, or else let the plants grow in the pots until they are mature. Then dry the bulbs off and plant them in the garden early in May. Sometimes bulbs handled in this way will blossom but one should not expect too much from them.

One of our county agents writes that people in his county frequently have difficulty with their tulip beds. He mentions the following as being a method successfully used by Mr. Schmidt, of Wilton: Remove dirt from the bed for a depth of about eight to ten inches. Soak the ground well and put back about four inches of fine screened dirt mixed half and half with well-rotted manure. Over this mixture spread a thin coat of fine sand, just enough so the bulbs set in it nicely. (The covering of sand is intended to check cutworms.) Then cover bulbs with ordinary garden dirt just a little higher than the rest of the ground so the water will not stand on them. After the first heavy frost cover the bed with straw to keep the bulbs from coming through too early in the spring. Do not uncover until they are at least one or two inches high.

A friend at Niagara, N. Dak., wants to know whether English walnuts could be grown as top grafts on black walnuts in this climate. The grafting can be done but grafting nuts is more difficult than grafting fruit trees. However, the English walnut is not hardy here and if the grafts did take they would kill back the first cold winter. If one wished to try grafting nut trees it would be better to top graft with some of the named varieties of black walnut such as Thomas.

Incidentally, we recently received samples of a seedling black walnut from northern Wisconsin which looks to be well worth trying as a grafted tree. Possibly some of our members who planted the hardy black walnuts this year might happen to get a seedling which would be larger and thinner shelled than others and thus be worthy of naming.

Have any of you grown White Gold potatoes? Our tests indicate it to be a very fine tuber and quite early but not a very heavy yielder. The new Katahdin potato, a few tubers of which were distributed among you last spring, usually made heavy yields of beautiful potatoes but the crop ripened with the last varieties.

If you grew Buttercup squash and want to maintain the true type, do not plant seed of those which do not have the turban. This lack of a turban is a reversion in shape to one of its parents, though the off-shape fruits may have as high quality as any of the other Buttercup.

According to the book, "Beans of New York," the Weber Wax Bean, which we have recommended highly for a number of years, is the same as Cracker Jack Wax.

The Michigan Experiment Station reports that protectors on tomato plants proved to be of undoubted value one year out of six, of doubtful value in two, and of no value in three. Glassene and glassene-like covers gave the best results. Our experience at the North Dakota Experiment Station leads us to believe that the plant protectors should only be put on to save the plants from frost and should be removed as soon as possible when the danger is over.

The Michigan Station states that a grower would gain as much or more by raising twice as many plants as required, setting out half very early. If they survive, carry them through the season; if they frost, replace them by the other extra plants.

MacMillen & Company announces the publication of a book entitled "Insects and Diseases of Ornamental Trees and Shrubs," by Felt and Rankin. The price is $5.00.

Bulletin No. 511 of the Ohio Experiment Station is entitled "Disease of Ornamental Plants."

(Continued from page 3)

If those who receive this magazine will pass this thought on to their friends, to local organizations such as garden clubs and civic clubs which are doing similar work, and give serious consideration to the value of affiliating with our State Horticultural Society, I believe that much good would come out of it.

Anyone having samples of new fruits, vegetables or plants, bring them with you to the meeting. We are always anxious to hear about new things. Seeing is more convincing than talk.

EXTRACTS FROM THE DIARY OF A TRAVELING MAN

W. A. Simmons

E. C. Hilborn

From July 18th to 20th in the allegedly cool city of Chicago the annual meeting of the American Association of Nurserymen was held which meeting was notable from our standpoint as being presided over for the first time by a president from our own Dakotas, Mr. E. C. Hilborn of Valley City. In his president's address Mr. Hilborn starts out with, "Once more the old earth has made the great journey around its orbit and has again brought the nurserymen of our broad land together. Again the nurseryman from York state can grasp the hand of the grower from Oregon, and the nurserymen of the north can listen again to the pet lie of the nurserymen of the south when they tell of the cool weather in Alabama."

The magazine, American Nurseryman, is loud in its praise of the manner in which Mr. Hilborn conducted the meeting and of the innovation he introduced of having group meetings, where those interested in special phases of the business could meet in round table discussions and thresh out their own particular problems. This feature is now to become a regular part of all future conventions.

Readers of Better Homes and Gardens will remember a very interesting article in the May, 1932, number entitled, "Let Me Tell You About the Hardiest Roses," from the pen of Mr. Hilborn.

October 3: I saw this sign on the lawn of a church in Fargo: "Please let me grow."

October 12: Mr. W. P. Davies in his "That Reminds Me" column of the Grand Forks Herald publishes a letter received from Mrs. W. R. Mutchler of Aneta, North Dakota, giving her method of keeping dahlia tubers over winter which is novel and seems worth trying. She says, in part: "I have raised several hundred clumps a year and have had as high as forty named varieties, some of them most difficult keepers. The ordinary deep red decorative type,

variety known as Pride of Shelby, is an easy keeper and I have several others of like nature, but when I want to be sure and winter my better dahlias I divide the clumps in the fall, leaving one eye to a tuber. I discard all broken or wobbly necks. Then I pack all the tubers of one variety in a pail or box and see that they are covered with fine soil which is neither very moist nor too dry.

"In this way I can pack away a lot of varieties, using little space. I set the boxes or pails on top of each other and leave them until spring planting time. If the tuber has part of the stem attached, lay it sideways and completely cover with soil; otherwise it will dry out.

"Many dahlia lovers become discouraged in raising this beautiful and versatile flower on account of storing difficulties. I am sure if they tried dividing the clumps as soon as dug instead of letting them wither as they invariably do, even if covered with sand or soil, dahlia lovers could keep their pet varieties over a long period of years."

An encouraging sign to see during the depression is exhibited by the Grand Forks Floral Company: "Our business is growing."

October 31: In a letter dated October 21st, Mr. John Robertson, President of the State Horticultural Society, tells of sending for the Buttercup Squash bulletin. He says, in part: "We had a fine crop and this is surely the very best squash I have ever eaten. It is the one kind that has not been praised too highly. With all other squash a meal or two was all I could stand, but with Buttercup the desire to eat it increases with each meal. We have really found a squash good in every way. We know something about it now, but I am curious to see what the originator says in his bulletin. When you offered to send seeds, I was not overly enthusiastic, but have felt thankful since that I did not pass this up for the time being."

Today's Fargo Forum tells of a plan to be followed during November to stimulate trade in the Fargo-Moorhead area. A dollar's worth of wheat, when brought to Fargo or Moorhead, is worth a dollar and ten cents in certificates issued by the Fargo Forum, and redeemable at a hundred Fargo and Moorhead business places.

The October number of the Country Gentleman contains an article by J. Sidney Cates about a marvelous sour cherry of the Montmorency type, obtained from France more than thirty years ago, just having its fruit brought to the notice of man in this country this year. Four trees were imported and set in the experiment farm at Arlington, where the birds attended to the harvesting of the crop until this year. By this time the trees have grown to great size, and as in so many other agricultural crops there may have been an overproduction or perhaps it was only—as some argue, underconsumption, but anyway some of the cherries were left for mankind to sample and the samplers unanimously proclaimed them the best ever. Now these cherries are being propagated as rapidly as possible and no time should be lost in sending them out for general planting, for if mankind is obliged to wait thirty years before the trees get large enough to produce more fruit than the birds can use, the sooner a start is made the better.

There is in this story some consolation and hope for me. For five years three Homer cherry trees have fruited on our place, but only the birds have ever tested the crop produced. But if our trees grow as rapidly as those at Arlington, in about twenty-five years more the birds will be unable to consume them all and the family may be able to obtain a few specimens, enough perhaps to get some idea about their quality.

"I sometimes think I'll never see
A grafter working on a tree."
—Brunswick Pilot.

November 25: An Indian statesman and ruler with horticultural slants was Padani Apapi, Struck by the Rees, 1804 to 1888, who now lies at rest in the pretty cemetery on the hill overlooking his former home at Greenwood, South Dakota. Struck by the Rees was always a firm friend of the white people and it is to him we are indebted for the treaty of 1858 that opened the southeastern portion of South Dakota to settlement. To him also both we and his people, the Yankton Sioux, owe the unbroken peace that has existed and the great strides his people have made in farming and in generally becoming self-supporting.

Struck by the Rees always urged his people to plant trees, and the nice groves that surround the buildings of the Indians on the Yankton Reservation are mainly due to his counsel. It was his desire, unfortunately never realized, to see the hills and bluffs overlooking the Missouri River again forested as Indian tradition says was formerly their condition. As is most fitting, the finest monument in the cemetery marks his last resting place, and let us hope he has found bliss in the Happy Hunting Ground.

December 1: A blackbird that dunked its bread made our place its summer home this heason. The bread we furnished it could have been a lot fresher and after making many fruitless efforts to reduce it to a size that would go down its offspring's throat it evidently concluded that it couldn't be done. After studying the matter for a time, it took the ancient crusts and flew over to the bird bath and put them afloat till they were softened so they could be divided.

Good naturalists assure us that neither birds nor animals think—that they only follow instinct. Perhaps it is instinct in man that makes him dunk his doughnuts.

We shall hope to see you all at our meeting in late January.

THE DOWNY AND HAIRY WOODPECKERS

O. A. Stevens, Fargo

The little downies are members of the household. They are among those of the small feathered folk which frequent the trees surrounding our dwellings, quietly and busily engaged in their own affairs. Frequently we hear their call notes, but they could by no means be called noisy as are the flickers. To some people the small woodpeckers are all "sapsuckers," but to apply this term to the downy is indeed unjust.

The downies are our smallest woodpeckers and are hardly seven inches in length. Their colors are black and white, chiefly black above and entirely white below. The wings are marked with white spots and the outer tail feathers are white with black bars. The male has a small but distinct red spot on the back of the neck, the female has none. In cold weather the feathers of the body are fluffed out and the back of the bird appears much more white from the exposed body feathers.

The downies are found practically all over North America, from Florida to California and Alaska. They appear to be as nearly non-migratory as any of our native birds. We may see little of them in summer if our locality lacks suitable nesting places. In winter they range more generally over wooded areas and are among the few species of birds which one can be quite sure to find on a winter walk in our woods. They may be seen, also, away from the woods. I recall seeing with some surprise a downy working in a patch of willows along a drainage ditch. The willow stems were no larger than one's finger, but of course this was only a foraging expedition. In cold weather the birds would need the shelter of hollows in the larger trees. They feed quite commonly among the small bushes or in weed patches.

The downies live chiefly upon insects. It is perhaps surprising that fruits and seeds make up as large a part as 21 per cent of the yearly total, but most insectivorous birds seem to enjoy fruits for a change. Another 21 per cent of their diet is composed of the larvae of wood-boring beetles. These are what they are hunting for when we see them tapping the trees. Not always do they dig for their worms, however. Ants compose another 21 per cent, and caterpillars were found to make up 16.5 per cent of the total. The small sucking bugs amounted to nearly 10 per cent, and in some cases it was found that the birds had fed almost exclusively upon scale insects.

For winter feeding, a piece of suet fastened to a tree is very simple and satisfactory. The downies seem to care little for the nuts which are so popular with the chickadees and nuthatches, nor do they carry away pieces as do the other birds so regularly. At the suet station, they continue eating until satisfied.

The downies' method of hunting borers is not such a mystery if one watches them for a time. Around the limb they tap, tap, not drilling, but merely sounding. When the limb rings dull, indicating a hollow under the bark, they drive through and explore with their long tongues.

Like other woodpeckers, the downies nest in cavities in trees and have white eggs. These are about five in number and three-quarters of an inch in length.

The hairy woodpeckers are very like the downies in appearance but are two inches longer. They are quite readily distniguished by their larger size as well as by their more vigorous movements and call notes. They occur over the same portions of the continent and both species are about equally likely to be seen. The hairy is usually considered the more difficult to approach. They have visited our feeding station but not as commonly as the downies. The wood-boring insects make up a somewhat larger part of their diet, and the small insects considerably less, than is the case with the downies.

FLOWER DISEASES

(The following is part of an article written by Louise Dosdall, Division of Plant Pathology, University Farm, St. Paul, Minn., which appeared in the November-December Minnesota Horticulturist.)

Mildews

Powdery mildews have also been common on delphinium, phlox, ranunculus and other plants. They are all recognized by the white coating on the leaves and stems. These diseases are also controlled by dusting with sulphur. When you cut down the delphiniums, burn the stems and keep the new growth dusted. This will lessen the amount of mildew in your garden next year. In fall, cut down all the stems and leaves and burn them. Next year dust as soon as the leaves begin to appear.

Mildews are always most severe when the host plants are placed in locations where a film of moisture remains on the leaves for long periods. This happens when the plants are shaded or crowded and the dew and rain does not dry off quickly. In planning your garden place the plants which are subject to mildew in sunny, well-ventilated places. This will prove a more effective way of controlling these diseases than trying to rely on protective dusts under the most favorable conditions for the development of the disease.

Peony Blight

Peony blight occurs wherever peonies are grown and in wet seasons does much damage. Early in the spring the young stems fall over and die as the result of a rot just at the ground line. Under favorable conditions this will continue until the stems are full grown and even after blossoming time. On the larger stems, leaves, branches, or flower buds may turn brown and die. During the late summer large irregularly shaped leaf spots are formed. Many of the older stems may not wilt down but will have brown cankers at the ground line. From these infected stems the rot extends back into the roots.

Beginning in early spring the wilted stems should be cut out well below the ground line just as soon as they appear. After the plants are through blooming they should be sprayed several times with Bordeaux mixture or dusted wth sulfur to prevent the leaf blight. In the fall the stems should be cut to the ground and burned. If the plants are mulched, the mulch should be removed early in the spring. Manure should be spaded into the soil and not allowed to come in contact with the stems. If the disease has been troublesome in past years, several inches of the top soil should be removed and replaced with coarse sand. This will allow good drainage and circulation of air around the stems. The surface of the soil may also be sprinkled with a 1-2000 strength mercuric chloride solution.

When it is time to divide the peony plants, cut out all decayed parts of the roots, dip the sound roots in a 1-1000 strength mercuric chloride solution and replant in fresh soil. Avoid poorly drained soil and shaded locations because under these conditions the disease is sure to be troublesome.

It is difficult for the amateur to recognize specific diseases and to distinguish between fungus and bacterial diseases, some types of insect injury or injury due to malnutrition, or an unbalanced water supply, for the symptoms are often very much alike. Certain cultural practices, however, should be followed consistently to diminish the possibility of disease in the garden. Continuous culture of the same kind of plant in the same plot of soil year after year is bound to result in the accumulation of disease-producing material. For this reason rotation should be practiced whenever possible. With a perennial garden, rotation is impossible, but careful removal and burning of debris in the fall, removal of badly diseased plants when they appear, and substituting clean soil, together with a proper dusting and spraying program, will do much to keep diseases in the garden at a minimum.

It's not a home until it's planted.

HOW TREES GROW AND THE EXPENSE OF GROWING THEM

O. E. Dill, Rapid City

The cost of raising a tree depends largely upon the variety, the soil it is grown in, climate, moisture, cost of labor, etc.

Cheapest of all ordinary trees raised for timber are two which are native of America—the Sitka Spruce and the Douglas Fir. Either of the trees can be raised in England, it is computed, for less than 20c a cubic foot of tree material. Under favorable conditions, board and lodging for the two trees may not exceed 8c per cubic foot of timber.

On the other hand, to raise a cubic foot of oak costs from 90c to $3.00, depending on the value of the land, and whether the tree is grown under cultivation or in the native forests.

There is a time, when the trees are very small, that the costs are small, and what the economists call "the value of the tree" may be only a few cents or a few dollars.

As time goes on and the maturity of the tree approaches, more and more money must be spent and more and more value is accumulated. Finally comes the day of the maximum value of the tree to the world. Growth and improvement stop; decay inevitably sets in; the value of the tree slowly drops back again to the zero point, from which it began.

To compare with the ten thousand dollars or more which it costs the United States to bring into the world, rear and train the average citizen, the costs of one complete tree may range from less than five dollars for a fir or spruce tree, to three hundred dollars for a great oak, or even twelve thousand dollars or more for one of the Giant Redwoods of California, assuming of course that this great tree had been raised and paid for by man instead of by Nature.

In natural forests almost everything is free. Even the most conservative of economists can charge as cost against the rearing of a natural forest only the value of the land thus taken out of use for other human purposes.

On the other hand, consider the shade trees in American towns and cities. They are grown under great difficulties. The smoke is very destructive to trees, and soil conditions are often very poor. Any large tree should be fertilized quite often, in the cities and towns, especially when planted along parkways. They should also have an underground irrigation system, for often the roots reach out into the street, under the pavement, which prevents any water from soaking into the ground. Large trees often die from this cause.

This irrigation can be done by digging holes about 4 feet square and 4 or 5 feet deep, then

filling the hole with rocks and boulders up to within a foot of the tops. Place in the center of this a 1½ in. gas pipe, then fill in with good earth. Lay sod over it, leaving the pipe extending about 6 inches above the ground. Put hose into the pipe and run this hole full of water. This forms what is called a sump. For large trees there should be two for each tree, but they should be about eighteen or twenty feet from the tree, and do not use too much water for there is danger of souring the soil.

Natural forests are growing scarce in the habitable portions of the earth. If man is to continue to use wood the natural forests must be replaced by artificial plantings. Tree seedlings must be grown, set out, watched, protected from animals and fire, supplied when necessary with water and fertilizer. Tree growing becomes a cultural matter, just as is the raising of human beings. Once it cost little or nothing to grow a tree, but it is becoming more and more expensive, not only for the nourishment and water for the tree, but there are hundreds of diseases and insects that kill out the trees today, and these have to be kept under control.

A tree without doubt is the most interesting study we could have. Take the cambium layer which you find between the wood and the bark of the growing tree; it is seldom thicker than a sheet of paper. Even in one of the California Redwoods, three or four hundred feet tall, you may find less than half a pint of this cambium material which, nevertheless, produces and has produced every bit of wood in the tree.

Examine this thin layer of tissue under a powerful microscope and you will find that it looks as if it were built up of tiny jelly-like needles, flattened along two sides, and built together into a kind of mosaic, like long slivers of stone fitted to form a pavement.

As the tree grows these flattened needle-like cells thicken. After a little each of the thickened cells divides lengthwise into two, like lengthwise slices cut from a banana. The new cells then thicken and divide in turn. Thus it is that the tree makes its growth, the woody tissues being produced in the inside of the cambium layer, and the bark tissues on the outside to serve as a protection against animals, weather or any accidents.

To do this woodmaking the living cells of the cambium layer must have food. Ordinarily this food is provided by the leaves of the trees. In these leaves, as in the green parts of all plant tissue, there exists the remarkable chemical substance called chlorophyll. By some secret process, which human chemists have not yet been able to understand, this green chlorophyll is able to absorb carbon dioxide gas from the traces of this gas in the air, to take up the energy of sunlight and to use these two together with the water from the roots to manufacture a simple form of sugar, such as the form that is called glucose, present in corn syrup and similar materials.

Inside the tree there exists not only this food factory, and the wood factory of the cambium layer which is to use this food, but also a complicated system of pipes and conduits. Through some of these pipes water is pulled up from the roots to provide the leaves with the water needed for sugar-making, and to take care of considerable evaporation of water which goes on all the time from the leaves, like perspiration from the human skin. Through another system of these tree pipes the watery solution of sugar manufactured by the leaves is distributed through the branches and down the trunk, to feed the cambium layer, which is busy thickening the tree by production of new wood.

For the white elm tree growing native in South Dakota the cambium layer will manufacture enough wood in one day to amount to a piece six feet long and as large around as a lead pencil. To produce this growth the tree needs for the various purposes of its life a daily average of about twenty to thirty gallons of water. The other two raw materials, carbon dioxide and sunlight, are equally costless.

If you should count the annual rings on one of the Giant Redwoods of California, you would find them to be very old. Prof. Hummington of Yale University discovered four of these giant trees which were more than three thousand years old when they were cut down. Had these trees been grown on land of even very moderate value to mankind, the cost of their raising would have amounted to something between ten and twelve thousand dollars. The five thousand or six thousand year old cypress near Mexico City would have cost between twenty-two and twenty-four thousand dollars.

While Nature not only contributed this land but poured out bountifully for thousands of years floods of rain and sunlight, man has spent little or nothing to raise these oldest and bulkiest creatures of the world to their present maturity and majesty.

I have had a number of people write to me in regard to the best time for planting trees. Fall is a very good time, after the tree goes into its dormant stage. When planting in the fall you should use plenty of water, for by watering heavily you settle the earth around the roots.

If you are wishing to plant a large tree, 6 to 10 inches in diameter, it is best to dig on one side of the tree, about 5 feet out from the trunk, cutting all the roots. This trench should extend one-fourth of the way around the tree. Then go to the other side of the tree and make another cut similar to the first one. Fill in these cuts and let the tree grow for one year. Then go back

and cut the other two fourths of the roots in the same way. Fill in this trench and let the tree grow for another year. This will give you a better root system. This tree should be dug entirely around then, and let the ball of earth freeze to the roots. Then take the tree, earth and all, and transplant it. Use plenty of water in doing this, also prune the branches rather severely when planting. This causes the growth to go into the roots for the first year. The trees should have plenty of water the first year.

If at any time it becomes necessary to make an incision into the bark of the tree, be sure your knife is very sharp. If it is not it may tear and bruise the cambium. After an incision is made it should never stand open over ten or fifteen minutes before the bark is sealed up again. If your trees are in bad condition, call a good tree surgeon and let him repair them for you. Do not try to do it yourself, for you may do more harm than good.

FUNGUS GNATS

The little flies found around the house plants that you mention in your recent letter to Mr. Mackintosh are very likely those known as fungus gnats. The larval forms of these flies are smooth, soft and whitish in color forms and live in the soil eating on decaying humus material. They also often attack the roots of the plants and hence these potted plants often look sickly. The best control that we know of is corrosive sublimate (mercuric chloride) at the rate of one-half ounce to four gallons of water. This material will eat into metal containers and therefore it must be dissolved in woodenware or crockery ware. The solution is used copiously in place of a regular watering. Later the same day or at least by the next day the ordinary watering should be given. One application is usually enough but if the forms persist another application may be given after an interval of ten days.

Another remedy that is often recommended for soil insects of this kind is the use of ordinary lime water. I have not followed this method as carefully as the other and I am not so sure that it will do the work. The lime water might be tried if you are hesitant about using the poisonous corrosive sublimate.—A. G. Ruggles, Professor of Entomology, in Minnesota Horticulturist.

South Dakota membership dues are due January first. We are trying to cut expenses as much as possible and everyone sending in their dues before we write to the mwill save us three cents in postage, also the extra work of writing to you.

Those who are not members of the society are urged to attend the meeting January 25th and 26th.

WINTER CARE OF WATER LILIES AND WINTER GARDENING

Thomas W. Hobart, Sioux Falls

(This article was written October 6.)

If you have not taken care of the water lilies and other water garden plants it is high time you should be doing so.

Drain the pools and let the tubs of plants set a few hours to dry off so as to handle without causing too much muss and dirt in moving.

If your lilies are the hardy varieties the tubs or pails or whatever container you use in your pools can be lifted and set in a cool place in the cellar.

These hardy varieties need only to be kept above actual freezing. Some of the owners of pools that I know are leaving these hardy varieties in the pools all winter.

Simply draining them and filling them with leaves or straw, packing the filling closely around the tubs and piling leaves or straw to a depth of 18 inches to 2 feet above the pool and out two or three feet beyond the margin then covering the whole with boards or burlap, old sacking or carpeting, to keep the leaves or straw in place and from plowing away.

While I have never kept water lilies outdoors through the winter, I have at different times kept other and more tender plants and bulbs outdoors successfully.

In doing this I have had excellent success by a variation of the general method, that I think could be adapted to the protection of lily pools with the greatest assurance of success.

What I have done that differs from the general routine if adopted for the protection of the pools would be that after the pool proper has been packed with the leaves or straw to a little above the surface to also spread a six-inch layer of the covering to a width of 2 or 3 feet around the edge of the pool.

This is to help keep frost from getting in from the sides. This whole covering should be about on a level. Perhaps a little higher over the center of the pool.

Now secure a roll of tarred felt or rosin sized or other waterproof sheathing paper and lay strips over the straw or leaf covering the same way a carpenter does in the sides and roof of the house. This keeps the mulching or protecting leaves dry at all times and makes a dead air space that frost has a mighty hard time to penetrate even in the coldest of winter.

Over this paper blanket place a layer of leaves or straw to a depth of a foot or so, and hold this in place with anything that will keep the covering from blowing away. There should be little danger of any of the hardy varieties of water lilies coming to harm.

The tender water lilies are something else

again, and I know of but few people who have made a successof keeping them through the winter.

One of the greatest if not the only cause of failure is that the roots are not kept warm enough during their winter rest and decay sets in and they are lost.

The tender varieties and the night bloomers which also belong to the tenderclass, are among our very finest flowers and most prolific and perpetual bloomers.

A better effort should be made by those who grow them to understand what the requirements of the plants are in order that they may be kept in good shape through the winter.

The first and main thing to know is that the roots even when dormant and not growing must be kept at a temperature constantly above 60° Fahrenheit. This means that in most cellars the containers must be near the furnace.

Even then some cellar floors are so cold that if the tubs are set directly on the floor the soil in which the roots are packed may fall at times, or even be at all times below the required minimum of 60°.

When this is so the tubs or whatever the roots are in should be set on boxes or elevated above the floor enough so that the warm air from the furnace will keep the water and soil in surrounding the dormant root at the required temperature.

If in addition to the warmth required for the successful keeping of the tender water lilies and the other tender varieties of aquatic plants, they could have a light place in the cellar, a place near a window or where the slanting rays of the winter sun could reach them even a little while each day they would come through the winter in much better condition.

For we should remember that these tender varieties are tropical or semi-tropical in nature and are always growing even if very slowly in winter in their natural habitat.

They never become fully dormant in the south lands where they grow naturally and are always enjoying the warmth and sunshine.

Their enforced imprisonment in the dark of our cellars is what causes them to die off and leave us holding the sack of disappointed hopes.

If you can keep them growing even ever so slightly during the winter you will be rewarded for your care by live growing plants in the spring.

If what I have told is not quite clear write me and I will try and clear up the dark spots.

Now a few words about winter gardening in the house.

I wonder if many of you have ever tried growing some of the fall bulbs in winter.

While this was an old custom of our grandmothers it had fallen into disuse for a decade but now seems to be having quite a revival.

If you have never tried growing bulbs in water a new gardening joy awaits you.

Because there are at least two bulbs that even the greenest of amateurs can succeed with from the start.

These are the Chinese Sacred Lily (really a Narcissus) and the Old Paper White Narcissus, that up to the time of the exclusion of the importation of the bulbs was a mainstay of the florists of the nation and in great demand by all lovers of flowers.

The bulbs of both of these flowers are now being produced in this country in quantities sufficient to in part supply the demand. While our florists may not be able to grow them in large quantities as of yore, they have become low enough in price so that the home garden can afford a dozen or more for their pleasure.

Having Secured the Bulbs

By the way don't take Paper White bulbs that show signs of two stems or that the bulbs seem to be in two halves, as these will not bloom. The good bulbs should be firm and sound and from 1¼ to 2 inches in diameter with but one stem showing.

For planting secure glass bowls about 6 or 7 inches across and 3 inches deep; place a little clean sharp sand in the bottom and set the bulb in this.

One Chinese lily or three or four paper whites to each bowl.

Surround the bulbs with small gravel or fancy small shells, or have the gravel with the surface covered with the shells.

Press these firmly around the bulbs to hold them in an upright position. Fill the bowl with water and set in a cool partly shaded place for a week, or until the bulbs are sending out roots into the sand and gravel. Then bring into the light in not too warm a room.

About 55 degrees at night and 65 or 70 in daytime will do. If too warm the growth and flowers will be soft and spindly and not last. Grown cool, the flowers will last for from two to four weeks.

Under fair conditions we have had these bloom in 21 days; at other times it has taken 35 to 50 days to get them to bloom.

The bulbs of both the Chinese and Paper White can be kept in a cool place until nearly Christmas time and then be planted in bowls or even potted in soil and brought into bloom in three to four weeks.

These are melancholy days. As Helen Rowland says, "In spring you buy a gay new hat and plant a bright new garden. In summer you buy a bright new bathing suit and start a gay new love affair. And just look at the darned things now!"

BEEKEEPING NOTES

J. A. Munro, Fargo, N. D.

Beekeepers, send in your one dollar dues as early as possible in 1933 so that you will enjoy the benefits of membership in the North Dakota Beekeepers' Association for the whole year. Remember that when sending in your one dollar dues you may include your subscription for bee journals. The special rate of 50 cents per year for either the American Bee Journal or Gleanings in Bee Culture is still to be had provided the memberships are sent in to your secretary at Fargo.

The annual meeting of the North Dakota Beekeepers' Association and regular winter short course in beekeeping will be held during Farmers and Homemakers Week at the North Dakota Agricultural College. The date of the Association meeting is January 18th and the short course will be held on the following day. Try to plan for taking in the two-day session and enjoy the fellowship of meeting others engaged in the same vocation as yourself. A program will be ready in advance of the meeting. Write in for your copy.

We are pleased to hear that Mrs. J. D. Beals, Dwight, North Dakota, president of her local homemakers' club, won first prize and silver loving sup on an exhibit of bees, honey, and honey cookery which her club sponsored recently. Your secretary would be pleased to hear of other bee and honey exhibits in various portions of North Dakota which have won similar distinction.

Mr. Charles Engle, Fargo, reports that his outdoor wintered colonies of bees had a flight during the mild weather which occurred in late November.

Word has come to this office that Mr. Charles Pemberton, beekeeper at St. Thomas, has been seriously ill for the past few months and little hope is being held for his recovery. The writer visited Mr. Pemberton a little over a year ago and was very favorably impressed with his well-kept apiary and his keen interest in beekeeping matters.

The many friends of the late Conrad Hertsgaard, Kindred, North Dakota, will regret to hear of his death. For many years past he has been a member of this association and attended our meetings regularly until ill health prevented him making the trips. He passed away recently following a paralytic stroke.

CHINESE ELM

We are finding the Chinese elm a desirable trees for our section and it does well, even on rather sandy soil, such as is common in the region of Garrison. Springtime is the best time for planting this tree, but it could be planted in the fall. There is some danger of winter killing when it is planted in the fall, but it is worth trying as trees of this type often come through the winter very well.—L. E. Longley, Assistant Professor of Horticulture, in Minnesota Horticulturist.

The new postal laws make it necessary for us to pay two cents for each copy of the paper that cannot be delivered to a member. When you change post offices please notify us, giving the old address as well as the new.